

2004 Fire Protection Workshop

RL's Fire Protection Engineering
Technical Qualification Program
A Practical Approach in Developing
'Home-Grown' Fire Protection Engineers

Craig P. Christenson, P.E. Fire Protection Engineer Richland Operations Office June 22, 2004



Or... "Home-Growing FPEs 101"





What is 'Home Growing FPE's'?

- Start with good seed:
 Motivated individuals with engineering credentials
- Water and Nurture:
 Train and Mentor
- Harvest:
 Qualify engineers as FPEs

Supporting DOE Cleanup Mission









Hanford's Current Mission

- Accelerating cleanup from plutonium production
- Shrinking the site
- Waste treatment and storage





D&D results in greater FPE demands

"...fire remains one of the main sources of risk to the public and workers... As more DOE facilities are decommissioned, many hazardous activities will be undertaken that will increase the risk of fire"

> John T. Conway, Chairman DNFSB Tech-27, June 14, 2000



Why RL Initiated this Program

- Hanford Site has only one qualified DOE FPE
- Management recognized greater demand on FED FPE resources with increase D&D activity
- RL experienced recruiting difficulties in obtaining qualified FPEs



DOE official warned of fire

■ District court judge to decide if Feds liable for '00 Hanford blaze

By Annette Cary Herald staff writer

A Department of Energy official warned of the possibility of a "mother of all fires" because of a lack of fire prevention work just a month and three days before the Hanford fire of 2000.

"I predict we will ultimately have a very large wildland fire in the near term future similar in size to the 1984 Hanford Range Fire," Craig Christenson, DOE's program monitor for the Hanford Fire Department in 2000, said in an e-mail sent from DOE's Richland office to DOE headquarters.

DOE headquarters.

The prediction turned out to be right. The 2000 fire started with a car and truck crash on Highway 24 and spread across 256 square miles, destroying 10 homes.

On Jan. 7, a Federal District Court judge in Richland is scheduled to consider whether the federal government may be held liable for the fire, which quickly spread across what used to be a wide firebreak along the road and south across the

See Fire, Page A2



Increased FPE demands

System Safety Oversight (DNFSB 2000-2)



- Additional TSR/DSA controls related to fire protection during D&D of nuclear facilities
- Independent Verification Reviews resulting from new TSRs
- Increased contractor oversight ORR & SSO demands
- Increase Field presence and support to Facility Representatives



Effective Oversight in Fire Protection is IMPORTANT!

OVERSIGHT MAINTAINS CLEAR EXPECTATIONS FOR FIRE SAFETY

Effective contract management requires that DOE conduct oversight of site fire-related contractor activities to verify that work is performed in a safe, secure, and quality manner that protects the public, the worker, and the environment and complies with contractual requirements

"The key to our success is not only finding problems but being part of the solution"





Benefits in 'home-grown'



PROS:

- Addresses Surplus of General Engineers
- Cross train vs downsize
- Better retention
- Engineers come with site familiarity, clearances, site specific training
- Cost may be less expensive than relocation package for new hire
- Program may be used as model in other hard to fill technical areas

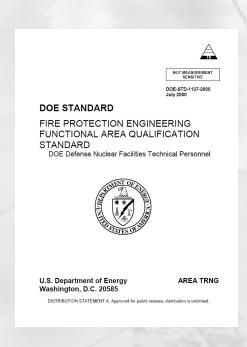
Cons:

- Time Period Required to Qualify
- Time commitment with resource-strained FPE

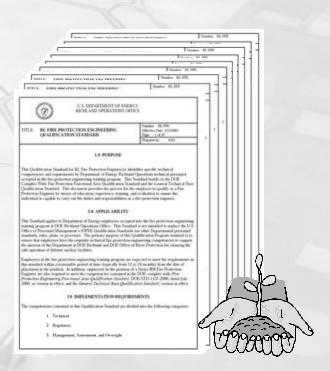


FPE Program Development

- DOE FPE Technical Qualification Standard
- Separate RL Site Specific FPE Technical Qualification Standard









Site Specific Standard Includes

- Technical Competencies
- Regulatory Competencies
- Management, Assessment, and Oversight Competencies
- Completion of Qualification Card
- Written Examination
- Documented Oral Evaluation
- Documented Observation of Performance



Example Technical Competencies

Fire Protection Engineers shall demonstrate a comprehensive and intensive knowledge of:

- Techniques to evaluate water supplies
- Combustion products and effects on life safety
- Water and non-water based FP systems
- Fire and detection systems
- Fire hazards and risk analysis
- Building construction
- Solve an array of FPE problems
- Site Specific Hazards, Facilities, etc.





Example Regulatory Competencies

Fire Protection Engineers shall demonstrate a comprehensive and intensive knowledge of:

- DOE Technical Standards, Directives, Guides, Handbooks, etc.
- NFPA Codes and Standards
- ASTM, AWS, ANSI, and ASME codes, standards
- Other Industry Codes/Standards (e.g. FM, UL, AWWA, etc.)





Example Management, Assessment and Oversight Competencies

Fire Protection Engineers shall demonstrate a comprehensive and intensive knowledge of:

- Assessment Techniques
- Ability to Conduct Assessments and Develop Reports
- Requirements and Process for Exemptions and Equivalencies
- Technical Reviews of Fire Hazard Analyses and DSAs



Qualification Evaluation

- Documented Completion of:
 - Qualification Card
 - Written Exam and Oral Board
 - Candidates that pass P.E. exam waive written exam; Oral Board for site specific
 - Observation of performance
 - DOE Site-Wide Qualification Standard
- Provisions for:
 - Remedial program if candidate cannot complete in required time period



Training and Time Period

- Standard includes suggested offsite, self-study and vendor training
 - NFPA, FM, SFPE, DOE, Manufacturer specific
 - Interagency cross training
 - Required reading
 - Specific Hanford Facility Familiarity and specific systems
- Two year program with DOE promotion commitment



Current Program Status

- Over 12 qualified applicants
- · 2 selected
 - One General Engineer
 (B.S. Mechanical Engineering)
 - One Nuclear (M.S.Nuclear Engineering)
- 1 started with EIT
- 1 passed EIT in April 2004 exam





Current Status Cont.

- Trainees preparing for FPE WA State PE in October 2004
- 1 took U of MD Graduate Course
- Trainees assisting RL FPE on site assessments and reviews
- Both attending numerous off site courses recognized by qualification standard
- Both in Program less than 1 year and each approximately 60% complete with qualification card



Approximate Current Cost

- Course Work-
 - ~\$6K/person (1st year)
- RL to reimburse for P.E.
 ~\$200/person
- Books and Materials
 ~\$4K/person (2 years)
- Plus current salary & benefits at GS-13 level; promotion to GS-14





Additional Information

craig_p_christenson@rl.gov







"Growing FPE's for the Future"

